

JAPAN

EDICT OF GOVERNMENT

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JIS C 9335-2-5 (2004) (English): Household and similar electrical appliances -- Safety -- Part 2-5: Particular requirements for dishwashers

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*The citizens of a nation must
honor the laws of the land.*

Fukuzawa Yukichi

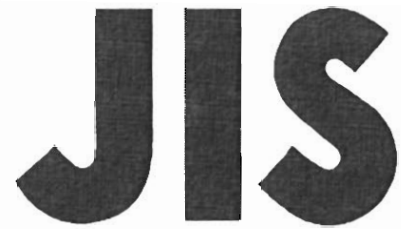
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JAPANESE
INDUSTRIAL
STANDARD

Translated and Published by
Japanese Standards Association

JIS C 9335-2-5 : 2004 (JEMA)

**Household and similar electrical
appliances—Safety—
Part 2-5 : Particular requirements
for dishwashers**

ICS 13.120; 97.040.40

Reference number : JIS C 9335-2-5 : 2004 (E)

Foreword

This translation has been made based on the original Japanese Industrial Standard revised by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee, as the result of proposal for revision of Japanese Industrial Standard submitted by Japan Electrical Manufacturer's Association (JEMA) with the draft being attached, based on the provision of Article 12 Clause 1 of the Industrial Standardization Law applicable to the case of revision by the provision of Article 14. Consequently **JIS C 9335-2-5 : 2000** is replaced with this Standard.

This revision has been made based on **IEC 60335-2-5 : 2002** *Household and similar electrical appliances—Safety—Part 2-5 : Particular requirements for dishwashers* for the purposes of making it easier to compare this Standard with International Standard; to prepare Japanese Industrial Standard conforming with International Standard; and to propose a draft of an International Standard which is based on Japanese Industrial Standard.

Attention is drawn to the possibility that some parts of this Standard may conflict with a patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have technical properties. The relevant Minister and the Japanese Industrial Standards Committee are not responsible for identifying the patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have the said technical properties.

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Household and similar electrical appliances—Safety—Part 2-5 : Particular requirements for dishwashers

Introduction This Japanese Industrial Standard has been prepared based on IEC 60335-2-5 *Household and similar electrical appliances—Safety—Part 2-5 : Particular requirements for dishwashers* published in 2002 as the fifth edition with some modifications in the technical contents. This is to be read in conjunction with JIS C 9335-1 : 2003 *Household and similar electrical appliances—Safety—Part 1 : General requirements*.

In this Standard, the portions underlined with dots are the matters modified from the original International Standard. The list of modification is given in annex 1 (informative) with the explanation being attached.

1 Scope This Standard deals with the safety of electric dishwashers for household use that are intended for washing and rinsing dishes, cutlery and other utensils, their rated voltage being not more than 250 V for single-phase appliances and 480 V for other appliances.

As far as is practicable, this Standard deals with the common hazards presented by appliances that are encountered by all persons in and around the home. However, in general, it does not take into account

- the use of appliances by young children or infirm persons without supervision;
- playing with the appliance by young children.

NOTE 101 Attention is drawn to the fact that

- for appliances intended to be used in vehicles or on board ships or aircraft, additional requirements may be necessary;
- in many countries additional requirements are specified by the national health authorities, the national authorities responsible for the protection of labour, the national water supply authorities and similar authorities.

NOTE 102 This Standard does not apply to

- commercial electric dishwashing machines (**JIS C 9335-2-58**);
- appliances intended for industrial purposes;
- appliances intended to be used in locations where special conditions prevail, such as the presence of a corrosive or explosive atmosphere (dust, vapour or gas).

NOTE : The International Standard corresponding to this Standard is as follows.

In addition, symbols which denote the degree of correspondence in the contents between the relevant International Standard and JIS are IDT (identical), MOD (modified), and NEQ (not equivalent) according to ISO/IEC Guide 21.

IEC 60335-2-5 : 2002 *Household and similar electrical appliances—Safety—Part 2-5 : Particular requirements for dishwashers* (MOD)

2 Normative references JIS C 9335-1 is applicable except as follows.

ISO 1817 : 1985 *Rubber, vulcanized—Determination of the effect of liquids*

ISO 4046 *Paper, board, pulp and related terms—Vocabulary*

3 Definitions Principal definitions used in this Standard shall be as specified in clause 3 of JIS C 9335-1, except as follows:

3.1.9 Replacement:

normal operation operation of the appliance under the following conditions

The appliance is operated with the maximum quantity of water for which it is constructed, without detergents or rinsing agents and without place settings or serving pieces. However if it is apparent that the test results will be affected by the load, the appliance is loaded with the maximum number of place settings and serving pieces specified in the instructions.

NOTE 101 The place settings and serving pieces to be used are specified in the instructions:

The water is supplied at any convenient pressure within the range specified in the instructions, the temperature of the water at the inlet being

- $60\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$ or that specified in the instructions if it is higher, for inlets intended for hot water only;
- $15\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$ for inlets intended for cold water only.

If the appliance has an inlet intended for hot or cold water, the most unfavourable water temperature is used

4 General requirement General requirement shall be as stated in clause 4 of JIS C 9335-1.

5 General conditions for the tests General conditions for the test shall be as stated in clause 5 of JIS C 9335-1 except as follows.

5.3 Addition to 5.3 of JIS C 9335-1:

The test of 15.101 is carried out before the test of 15.3.

6 Classification Classification shall be as stated in clause 6 of JIS C 9335-1 except as follows.

6.1 Modification:

Appliances shall be class 0I, class I, class II or class III.

Compliance is checked by inspection and appropriate test.

6.2 Addition to 6.2 of JIS C 9335-1:


Appliances intended to stand on a draining board shall be at least IPX1.

7 Marking and instructions Marking and instructions shall be as stated in clause 7 of JIS C 9335-1 except as follows.

7.1 Addition to 7.1 of JIS C 9335-1:

Appliances without automatic water-level control shall be marked with the maximum permissible water level.

7.6 Addition to 7.6 of JIS C 9335-1:

 [symbol 5036 of IEC 60417-1] dangerous voltage

7.10 Addition to clause 10 of JIS C 9335-1:

If the off position is only indicated by letters, the word "off" or the Japanese Kanji character denoting "off" shall be used.

7.12 Addition of clause 12 of JIS C 9335-1:

The instructions shall state

- the maximum number of place settings to be washed;
- that the door should not be left in the open position since this could present a tripping hazard;
- how to load the dishwasher, and the substance of the following:

WARNING : Knives and other utensils with sharp points must be loaded in the basket with their points down or place in a horizontal position.

If symbol 5036 of IEC 60417-1 is used, its meaning shall be explained.

7.12.1 Addition to 7.12.1 of JIS C 9335-1:

The installation instructions shall state

- that the appliance is to be connected to the water mains using new hose-sets and that old hose-sets should not be reused;

NOTE 101 This instruction is not required if the hoses are permanently attached to the appliance.

- the maximum permissible inlet water pressure, in megapascals, for appliances intended to be connected to the water mains;
- the minimum permissible inlet water pressure, in megapascals, if this is necessary for the correct operation of the appliance;
- for dishwashers with ventilation openings in the base, that a carpet must not obstruct the openings.

7.14 Addition to 7.14 of JIS C 9335-1:

The height of symbol 5036 of IEC 60417-1 shall be at least 5 mm.

Compliance is checked by measurement.

7.101 The enclosure of magnetic valves, and similar components incorporated in external hoses for direct connection to the water mains, shall be marked with symbol 5036 of **IEC 60417** if their working voltage exceeds extra-low voltage.

NOTE : This symbol is a warning sign and the rules of **IEC 3864** apply.

Compliance is checked by inspection.

8 Protection against access to live parts Protection against access to live parts shall be as stated in clause 8 of **JIS C 9335-1**.

9 Starting of motor-operated appliances Clause 9 of **JIS C 9335-1** is not applicable.

10 Power input and current Power input and current shall be as stated in clause 10 of **JIS C 9335-1** except as follows.

10.1 Addition to 10.1 of **JIS C 9335-1**:

NOTE 101 The selected representative period is the period during which the power input is the highest.

10.2 Addition to 10.2 of **JIS C 9335-1**:

NOTE 101 The selected representative period is the period during which the current is the highest.

11 Heating Heating shall be as stated in clause 11 of **JIS C 9335-1** except as follows.

11.7 Replacement of 11.7 of **JIS C 9335-1**:

Appliances incorporating a programmer or timer are operated for two cycles with the programme that results in the highest temperature rises. The cycles are separated by a rest period of 15 min with the door or lid open.

Other appliances are subjected to two cycles of the sequence stated in the instructions that results in the highest temperature rises or for two periods of 15 min each, whichever is longer. The cycles or periods are separated by a rest period of 15 min with the door or lid open. Discharge pumps driven by a separate motor are then subjected to three periods of operation, each separated by a rest period of 15 min. The duration of each period of operation is 1.5 times the period necessary to empty the appliance when it is filled with the maximum quantity of water for which it is constructed. The level of the water discharge is

- 90 cm above the floor, for appliances standing on the floor;
- the maximum height above the supporting surface, as stated in the instructions, for other appliances.

12 Void

13 Leakage current and electric strength at operating temperature Leakage current and electric strength at operating temperature shall be as stated in clause 13 of **JIS C 9335-1** except as follows.

13.2 Modification of 13.2 of JIS C 9335-1:

For stationary class I appliances, the leakage current shall not exceed 3.5 mA, or 1 mA/kW rated power input with a limit of 5 mA, whichever is higher.

14 Transient overvoltages Transient overvoltages shall be as stated in clause 14 of JIS C 9335-1.

15 Moisture resistance Moisture resistance shall be as stated in clause 15 of JIS C 9335-1 except as follows.

15.1 Addition to 15.1 of JIS C 9335-1:

Magnetic valves and similar components incorporated in external hoses for connection to the water mains are subjected to the test specified for IPX7 appliances.

15.2 Replacement of 15.2 of JIS C 9335-1:

Appliances shall be constructed so that spillage of liquid in normal use does not affect their electrical insulation, even if an inlet valve fails to close.

Compliance is checked by the following test.

Appliances with a type X attachment, except those having a specially prepared cord, are fitted with the lightest permissible type of flexible cord of the smallest cross-sectional area specified in table 13.

Appliances intended to be filled with water by the user are completely filled with water containing approximately 1 % NaCl. A further quantity of this solution equal to 15 % of the capacity of the appliance or 0.25 L, whichever is greater, is poured in steadily over a period of 1 min.

Other appliances are operated until the maximum water level is reached, and 5 g of the detergent specified in annex AA is added for each litre of water in the appliance or the detergent is added as specified in the instruction of detergent. The inlet valve is held open and the filling continued for 15 min after first evidence of overflow or until the inflow is automatically stopped by other means.

For appliances that are loaded from the front, the door is then opened if this can be achieved manually and without damage to the door interlock system.

For appliances having a working surface, 0.5 L of water containing approximately 1 % NaCl and 0.6 % of rinsing agent, as specified in annex AA, is poured over the top of the appliance, the controls being placed in the on position. The controls are then operated through their working range, this operation being repeated after a period of 5 min.

The appliance shall then withstand the electric strength test of 16.3 and inspection shall show that there is no trace of water on insulation that could result in a reduction of clearances and creepage distances below the values specified in clause 29.

15.101 Appliances shall be constructed so that foaming does not affect electrical insulation.

Compliance is checked by the following test which is carried out immediately after that of 15.2.

The appliance is operated under the conditions specified in clause 11 but for one complete cycle with the programme that results in the longest period of operation. A solution consisting of 20 g of NaCl and 1 ml of a solution of 28 % by mass of dodecyl sodium sulphate ($C_{12}H_{25}Na_2SO_4$), is added for each 8 L of water in the appliance.

For appliances incorporating a detergent dispenser, the solution is added manually at the point in the cycle when it would normally be dispensed automatically. For other appliances, the solution is added before starting the cycle.

The appliance shall then withstand the electric strength test of 16.3.

The appliance is then operated for two cycles under the same conditions, except that the solution is not added. It shall then withstand the electric strength test of 16.3.

The appliance is kept in a test room having a normal atmosphere for 24 h before being subjected to the test of 15.3.

NOTE : The solution used for this test has to be stored in a cool atmosphere and used within seven days of its preparation.

16 Leakage current and electric strength Leakage current and electric strength shall be as stated in clause 16 of JIS C 9335-1.

17 Overload protection of transformers and associated circuits Overload protection of transformers and associated circuits shall be as stated in clause 17 of JIS C 9335-1.

18 Endurance Clause 18 of JIS C 9335-1 is not applicable.

19 Abnormal operation Abnormal operation shall be as stated in clause 19 of JIS C 9335-1 except as follows.

19.1 Addition:

For appliances incorporating a programmer or timer, the tests of 19.2 and 19.3 are replaced by the test of 19.101.

19.2 Addition:

Restricted heat dissipation is obtained without water in the appliance or with just sufficient water to cover the heating elements, whichever is the more unfavourable.

19.9 Subclause 19.9 of JIS C 9335-1 is not applicable.

19.13 Addition:

During the tests of 19.101, the temperature of windings shall not exceed the values specified in table 8.

19.101 The appliance is supplied at rated voltage and operated under normal operation. Any fault condition or unexpected operation that may be applied in normal use is introduced.

- NOTE 1 Examples of fault conditions and unexpected operations are
- the programmer stopping in any position;
 - disconnection and reconnection of one or more phases of the supply during any part of the programme;
 - open-circuiting or short-circuit of components;
 - failure of a magnetic valve;
 - opening and reclosing of the door or lid during any part of the programme, if this possible.
- NOTE 2 Locking the main contacts of a conductor, used for energizing heating elements, in the “on” position, is considered to be a fault condition, unless at least two independent sets of contacts are provided. This may be achieved by two contactors operating independently of each other or by one contactor having two independent armatures operating two independent sets of contacts.
- NOTE 3 In general, tests are limited to the fault conditions that may be expected to give the most unfavourable results.
- The simulation of component faults is limited to those that could expose the user to a hazard.
- NOTE 4 If operation without water in the appliance is a more unfavourable condition for starting any programme, the tests with that programme are carried out with the water valve closed. This valve is not closed after the programme has started to operate.
- NOTE 5 If the appliance stops at any particular point in the programme, the test with that fault condition is considered to be ended.
- NOTE 6 The fault condition with
- the automatic filling device held open is covered by **15.2**;
 - thermal controls short-circuited is covered by **19.4**;
 - motor capacitors short-circuited or open-circuited are covered by **19.7**.

20 Stability and mechanical hazards Stability and mechanical hazards shall be as stated in clause **20** of **JIS C 9335-1** except as follows.

20.1 Modification:

The appliance is empty or filled as specified for normal operation, whichever is more unfavourable. Doors and lids are closed and any castors turned to the most unfavourable position.

Addition:

For appliances that are loaded from the front, compliance is also checked by the test of **20.101**.

20.101 The appliance is placed on a horizontal surface and a mass of 23 kg is placed on, or suspended from, the centre of the open door or any fully opened drawer, whichever is more unfavourable. Any castors are turned to the most unfavourable position.

For appliances normally used on a table or similar support and incorporating a door having horizontal hinges and a horizontal rest position, a mass of 7 kg is used instead of a mass of 23 kg.

Appliances normally used on a table or similar support and which have a drawer are additionally tested with the drawer placed in the most unfavourable position and loaded with the maximum number of place settings in accordance with the instructions.

If a dishwasher is combined with a hob, the test is carried out with the appliance loaded as specified in **3.1.9**, the point of application of the mass being at the centre of the outer edge of the open door or drawer.

The appliance shall not tilt.

20.102 Doors and lids shall be interlocked so that the appliance can only be operated when the door or lid is closed, unless there is adequate protection against ejection of hot water when the door or lid is opened.

Compliance is checked by inspection and by manual test.

NOTE : Slight splashing occurring immediately after the door or lid has been opened is neglected.

21 Mechanical strength Mechanical strength shall be as stated in clause **21** of **JIS C 9335-1**.

22 Construction Construction shall be as stated in **JIS C 9335-1** except as follows.

22.6 Modification:

Instead of coloured water, a solution composed of 0.6 ml of the rinsing agent specified in annex AA per litre of distilled water is used.

Addition:

NOTE 101 Parts that withstand the ageing test specified in annex BB are not considered to be parts where leakage could occur.

Drops of undiluted rinsing agent, as specified in annex AA, are applied to the external surface of the parts from which rinsing agent could leak if a seal fails.

After the test, there shall be no rinsing agent on the insulation of internal wiring, if deterioration of the insulation could result in a hazard.

NOTE 102 The influence of opening and closing the door is taken into account.

NOTE 103 Leakage of rinsing agent onto porous material is taken into account if this material is in contact with internal wiring.

22.101 Appliances shall withstand the water pressure expected in normal use.

Compliance is checked by connecting the appliance to a water supply having a static pressure equal to twice the maximum permissible inlet water pressure or 1.2 MPa, whichever is higher, for a period of 5 min.

There shall be no leakage from any part, including the inlet water hose.

22.102 Appliances shall be constructed so that heating elements cannot come into contact with combustible material inside the appliance as a result of deformation of the heating elements or of parts supporting them.

Compliance is checked by inspection.

22.103 Appliances shall be constructed so that dishes and cutlery contacting heating elements during the drying period do not give rise to a fire hazard.

Compliance is checked by the following test.

The appliance is placed on a piece of white pinewood board covered with tissue paper. Polyethylene disks, approximately 80 mm in diameter and 2 mm thick, are placed at the most unfavourable location, where possible directly in contact with the heating element. The appliance is supplied at 1.1 times rated voltage and operated for a drying period under normal operation.

When smoke or odour is evident, or when one-third of the drying period has elapsed, whichever occurs first, the door or lid is opened.

Any flames, burning drops or glowing particles shall not spread fire to other parts of the appliance. Flames, except from the disks, shall extinguish within 30 s of opening the door or lid. The tissue paper shall not burn or the board become scorched.

NOTE 1 Tissue paper is specified in **6.86** of **ISO 4046** as thin, soft and strong lightweight wrapping paper generally intended for packing delicate articles, its substance being between 12 g/m² and 30 g/m².

NOTE 2 The material of the disks used for the test is unfilled natural colour polyethylene without flame-retardants and has a relative density of 0.96 ± 0.005.

23 Internal wiring Internal wiring shall be as stated in clause **23** of **JIS C 9335-1** except as follows.

23.3 Modification of **23.3** of **JIS C 9335-1**:

Instead of the test being carried out while the appliance is in operation, it is carried out with the appliance disconnected from the supply.

The number of flexings is increased to 100 000.

Addition:

After the test, not more than 10 % of the strands of any conductor of the internal wiring between the main part of the appliance and the door shall be broken.

23.101 The insulation and sheath of internal wiring for the supply of magnetic valves and similar components incorporated in external hoses for connection to the water mains shall be at least equivalent to light polyvinyl chloride sheathed flexible cord (code designation **60227 IEC 52** specified in **JIS C 3662-5**).

Compliance is checked by inspection.

NOTE: The mechanical characteristics specified in **JIS C 3662** series are not checked.

24 Components Components shall be as stated in clause **24** of **JIS C 9335-1** except as follows.

24.1.4 Addition to **24.1.4** of **JIS C 9335-1**:

The number of cycles of operation for programmers is 3 000.

25 Supply connection and external flexible cords Supply connection and external flexible cords shall be as stated in clause **25** of **JIS C 9335-1**.

26 Terminals for external conductors Terminals for external conductors shall be as stated in clause **26** of **JIS C 9335-1**.

27 Provision for earthing Provision for earthing shall be as stated in clause **27** of **JIS C 9335-1**.

28 Screws and connections Screws and connections shall be as stated in clause **28** of **JIS C 9335-1**.

29 Clearances, creepage distances and solid insulation Clearances, creepage distances and solid insulation shall be as stated in clause **29** of **JIS C 9335-1** except as follows.

29.2 Addition to **29.2** of **JIS C 9335-1**:

The microenvironment is pollution degree 3, and the insulation shall have a CTI not less than 250, unless the insulation is enclosed or located so that it is unlikely to be exposed to pollution during normal use of the appliance due to

- condensation produced by the appliance;
- chemicals, such as detergent or rinse aid.

30 Resistance to heat and fire Resistance to heat and fire shall be as stated in clause **30** of **JIS C 9335-1** except as follows.

30.2 Addition to **30.2** of **JIS C 9335-1**:

For appliances incorporating a programmer or a timer, **30.2.3** is applicable. For other appliances, **30.2.2** is applicable.

31 Resistance to rusting Resistance to rusting shall be as stated in clause **31** of **JIS C 9335-1**.

32 Radiation, toxicity and similar hazards Radiation, toxicity and similar hazards shall be as stated in clause **32** of **JIS C 9335-1**.

Annexes

The annexes A to O and annex 1 of **JIS C 9335-1** are applicable except as follows.

Annex AA (normative) Detergent and rinsing agent

AA.1 Detergent The composition of the detergent is as follows:

Substance	Parts by mass %
Penta-sodiumtriphosphate ("Tripoly") Thermphos NW	50.00
Sodium metasilicate KO (anhydrous)	40.00
Sodium sulphate (anhydrous)	5.75
Sodium dichlorisocyanurate-dihydrate CDB 56 C	2.25
Plurafac RA 43 ¹⁾	2.00

The plurafac RA 43 is thoroughly mixed with the silicate and sulphate. The sodium dichlorisocyanurate-dihydrate is mixed into the phosphate. The two are then thoroughly mixed together.

NOTE 1 The detergent should be stored in a cool atmosphere in a waterproof bag in quantities not exceeding 1 kg. It should be used within three months.

NOTE 2 The composition of the detergent is extracted from **IEC 60436**.

AA.2 Rinsing agent The composition of the rinsing agent is as follows:

Substance	Parts by mass %
Plurafac LF 221 ²⁾	15.0
Cumene sulfonate (40 % solution)	11.5
Citric acid (anhydrous)	3.0
Deionized water	70.5

The rinsing agent has the following properties:

- viscosity, 17 mPa·s;
- pH, 2.2 (1 % in water).

NOTE 1 Any commercially available rinsing agent may be used, but if there is any doubt with regards to the test results, this composition is to be used.

NOTE 2 The composition of the rinsing agent is extracted from **IEC 60436**.

- 1) Plurafac RA 43 is the trade name of a product supplied by BASF. This information is given for the convenience of users of this International Standard and does not constitute an endorsement by **IEC** and **JIS** of this product.
- 2) Plurafac LF 221 is the trade name of a product supplied by BASF. This information is given for the convenience of users of this International Standard and does not constitute an endorsement by **IEC** and **JIS** of this product.

Annex BB (normative)
Ageing test for elastomeric parts

The ageing test on elastomeric parts is carried out by measuring their hardness and mass before and after immersion in solutions of detergent and rinsing agent at elevated temperature.

The test is carried out on at least three samples of each part. The test procedure is as specified in **ISO 1817**, with the following modifications.

4 Test liquids Two test liquids are used:

- one liquid is obtained by dissolving 6 g of the detergent specified in annex AA per 1 L of distilled water;
- the other liquid is composed of 0.6 ml of rinsing agent as specified in annex AA per 1 L of distilled water.

NOTE: Care is to be taken to ensure that the total mass of the test pieces immersed does not exceed 100 g per 1 L of solution. During the tests, the test pieces are not to be exposed to direct light. Test pieces of different compounds are not to be immersed at the same time in the same solution.

5 Test pieces

5.4 Conditioning of test pieces The temperature is $23\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$ and the relative humidity is $(50 \pm 5)\%$.

6 Immersion in the test liquid

6.1 Temperature The solution is heated within 1 h with the test pieces immersed, to a temperature of $75^{+5}_0\text{ }^{\circ}\text{C}$ and maintained at this value. The solution is renewed every 24 h and heated in the same way.

NOTE: To avoid undue evaporation of the solution, it is recommended to use a closed-circuit system or similar method for renewing the solution.

6.2 Duration The test pieces are immersed for a total period of 48^{+1}_0 h .

The test pieces are then immediately immersed in a fresh solution, which is maintained at ambient temperature. The pieces are immersed for $45\text{ min} \pm 15\text{ min}$.

After having been removed from the solution, the test pieces are rinsed in cold water at $15\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$ and then dried with blotting paper.

7 Procedure

7.2 Change in mass The increase in mass of the test pieces shall not exceed 10 % of the value determined before immersion.

7.6 Change in hardness The micro-test for hardness applies.

The hardness of the test pieces shall not have changed by more than 8 IRHD. Their surface shall not have become sticky and shall show no crack visible to the naked eye or any other deterioration.

Annex 1 (informative)

Comparison table between JIS and corresponding International Standard

JIS C 9335-2-5:2004 Household and similar electrical appliances—Safety— Part 2-5:Particular requirements for dishwashers					IEC 60335-2-5:2002 Household and similar electrical appliances— Safety—Part 2-5:Particular requirements for dishwashers		
(I) Requirements in JIS		(II) Inter- national Standard number	(III) Requirements in International Standard		(IV) Classification and details of technical deviation between JIS and the International Standard by clause Location of deviation: text, annexes Indication method: dotted underlines		(V) Justification for the technical deviation and future measures
Clause	Content		Clause	Content	Classifi- cation by clause	Detail of technical deviation	
1 Scope	Safety of electric dish- washers for household use with rated voltages not exceeding 250 V for single phase and 480 V for others	IEC 60335-2-5	1	Identical with JIS.	IDT	—	
2 Normative references	Additionally applicable standards: ISO 1817, ISO 4046	IEC 60335-2-5	2	Identical with JIS.	IDT	—	
3 Definitions	Definition of normal operation Number of serving pieces, water temperature	IEC 60335-2-5	3	Identical with JIS. However the refer- ence place settings for testing is speci- fied in IEC 60436.	MOD/ deletion	Standard tableware is not specified in JIS.	Tableware specified in IEC does not match with custom of Japanese life (use of rice bowl).
4 General re- quirement	General rules for safety	IEC 60335-2-5	4	Identical with JIS.	IDT	—	
5 General conditions for the tests	Sequence of tests and so on	IEC 60335-2-5	5	Identical with JIS.	IDT	—	

(I) Requirements in JIS		(II) International Standard number	(III) Requirements in International Standard		(IV) Classification and details of technical deviation between JIS and the International Standard by clause Location of deviation: text, annexes Indication method: dotted underlines		(V) Justification for the technical deviation and future measures
Clause	Content		Clause	Content	Classification by clause	Detail of technical deviation	
6 Classification	<p>6.1 At least class 0I is required in classification according to protection against electric shock.</p> <p>6.2 At least IPX1 is required for appliances intended to stand on draining board.</p>	IEC 60335-2-5	6	<p>6.1 At least class I is required in classification according to protection against electric shock.</p> <p>6.2 Identical with JIS.</p>	IDT	JIS approves class 0I appliances.	Approval of class 0I appliances is because of the circumstances of power distribution system in Japan (without earthing in a plug socket).
7 Marking and instructions	Marking of off position, instructions expressing maximum number of place settings, and precaution for appliances directly connected with water mains	IEC 60335-2-5	7	Identical with JIS . However if the off position is only indicated by letters, the word "off" shall be used.	MOD/ addition	JIS had added the Japanese Kanji character denoting "off" alternating just "off".	Authorized Japanese indication.
8 Protection against access to live parts	Inspection by means of test finger and test pin	IEC 60335-2-5	8	Identical with JIS .	IDT	—	
9 Starting of motor-operated appliances	Not applicable.	IEC 60335-2-5	9	Identical with JIS .	IDT	—	

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Clause	Content		Clause	Content	Classification by clause	Detail of technical deviation	
10 Power input and current	Marked value of rated power input or current, tolerances on measured values, procedure of measurements	IEC 60335-2-5	10	Identical with JIS .	IDT	—	
11 Heating	Installation conditions, duration of test, and temperature measurement points are specified.	IEC 60335-2-5	11	Identical with JIS .	IDT	—	
12 Void	Void	IEC 60335-2-5	12	Identical with JIS .	IDT	—	
13 Leakage current and electric strength at operating temperature	Leakage current test and electric strength test under operating conditions	IEC 60335-2-5	13	Identical with JIS .	IDT	—	
14 Transient overvoltages	Alternative test by means of impulse test on a part where the specified clearance is not satisfied	IEC 60335-2-5	14	Identical with JIS .	IDT	—	

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Clause	Content		Clause	Content	Classification by clause	Detail of technical deviation	
15 Moisture resistance	IP test, spillage test and humidity proof test	IEC 60335-2-5	15	Identical with JIS . However use of detergent in spillage test is standardized to 5 g/L.	MOD/addition	In JIS made such addition that if the amount of detergent is specified in the instruction manual, the said amount shall be used.	In Japan the quality, temperature and amount of water are different from those assumed in IEC , therefore the detergent normally used in Japan has different composition from that specified in annex AA. Accordingly JIS states that the amount written in the instruction manual shall be used if detergent in Japanese market is used. (IEC admits use of detergent other than that specified in annex AA.)
16 Leakage current and electric strength	Evaluation of insulation after moisture resistance test	IEC 60335-2-5	16	Identical with JIS .	IDT	—	
17 Overload protection of transformers and associated circuits	Temperature test where overload or short-circuit of transformer is simulated	IEC 60335-2-5	17	Identical with JIS .	IDT	—	
18 Endurance	Not applicable.	IEC 60335-2-5	18	Identical with JIS .	IDT	—	

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Clause	Content		Clause	Content	Classification by clause	Detail of technical deviation	
19 Abnormal operation	Limiting of heat radiation, locking of motor, failure of electronic components, failure of programme, etc.	IEC 60335-2-5	19	Identical with JIS.	IDT	—	
20 Stability and mechanical hazards	Stability and interlocks	IEC 60335-2-5	20	Identical with JIS. However the reference place settings for testing is specified in IEC 60436.	MOD/deletion	JIS does not specify the reference place settings for testing. (See 3.1.9.)	Tableware specified in IEC does not match with custom of Japanese life (use of rice bowl).
21 Mechanical strength	Test by impact hammer	IEC 60335-2-5	21	Identical with JIS.	IDT	—	
22 Construction	Construction in general, hydraulic pressure test, hazard resulted from a knife which comes in contact with heat element	IEC 60335-2-5	22	Identical with JIS.	IDT	—	
23 Internal wiring	Flexure of internal wiring (100 000 times), electric strength, internal wiring incorporated in hose, etc.	IEC 60335-2-5	23	Identical with JIS.	IDT	—	
24 Components	The number of cycles of operation for programmers is 3 000.	IEC 60335-2-5	24	Identical with JIS.	IDT	—	

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Clause	Content		Clause	Content	Classification by clause	Detail of technical deviation	
25 Supply connection and external flexible cords	Types, sectional area, etc. of cord	IEC 60335-2-5	25	Identical with JIS.	IDT	—	
26 Terminals for external conductors	Prevention of loosening, sizes, etc. of terminal screws	IEC 60335-2-5	26	Identical with JIS.	IDT	—	
27 Provision for earthing	Prevention against loosening of earth wire, resistance to corrosion, earth current flow test, etc.	IEC 60335-2-5	27	Identical with JIS.	IDT	—	
28 Screws and connections	Endurance, types, prevention against loosening, etc. of screws	IEC 60335-2-5	28	Identical with JIS.	IDT	—	
29 Clearances, creepage distances and solid insulation	Clearances, creepage distances, thickness of solid insulation Pollution degree 3, and CTI values not less than 250 are required.	IEC 60335-2-5	29	Identical with JIS.	IDT	—	
30 Resistance to heat and fire	Ball pressure test glow-wire test, needle-flame test	IEC 60335-2-5	30	Identical with JIS.	IDT	—	

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Clause	Content		Clause	Content	Classification by clause	Detail of technical deviation	
31 Resistance to rusting	Countermeasure against rusting	IEC 60335-2-5	31	Identical with JIS .	IDT	—	
32 Radiation, toxicity and similar hazards	No special requirement	IEC 60335-2-5	32	Identical with JIS .	IDT	—	
Annexes	As specified in JIS C 9335-1 .	IEC 60335-2-5	Annexes	Identical with JIS .	IDT	—	
Annex AA	Detergent and rinsing agent	IEC 60335-2-5	Annex AA	Identical with JIS .	IDT	—	There is no technical difference, however such caution that JIS also does not endorse particular product is added.
Annex BB	Ageing test for elastomeric parts	IEC 60335-2-5	Annex BB	Identical with JIS .	IDT	—	

Designated degree of correspondence between **JIS** and International Standard: MOD

- Remarks 1 Symbols in sub-columns of classification by clause in the above table indicate as follows:
- IDT: Identical in technical contents.
 - MOD/addition: Adds specification item(s) or content(s) not included in International Standard.
 - MOD/deletion: Deletes specification item(s) or content(s) of International Standard.
- 2 Symbol in column of designated degree of correspondence between **JIS** and International Standard in the above table indicates as follows:
- MOD: Modifies International Standard.

Reference standards

The reference standards in **JIS C 9335-1** are applicable except as follows:

Addition:

JIS C 9335-2-58 *Safety of household and similar electrical appliances—Part 2-58 : Particular requirements for commercial electric dishwashing machines*

IEC 60436 *Methods for measuring the performance of electric dishwashers*

IEC 61770 *Electric appliances connected to the water mains—Avoidance of back-siphonage and failure of hose sets*

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